

# Performance Review Body Monitoring Report 2020

The 2020 monitoring consists of five reports:

1. **PRB Monitoring Report 2020**
2. Annex I – Member States' factsheets
3. Annex II – Member States' detailed analysis for experts
4. Annex III – Safety report
5. Annex IV – Investments report

October 2021

## REMARKS FROM THE CHAIR

The PRB Annual Monitoring Report 2020 looks at a year filled with unprecedented challenges for the global and European aviation industry. At the time of writing this report (summer 2021), we know that the recovery from the decrease in traffic is difficult and slow with travel restrictions continuing to apply. In July 2021, flights within the Single European Sky area (which excludes the U.K. from 2020 onwards) were at 64% of the July 2019 level (figures without U.K traffic considered in 2019). At least within the EU, the co-ordinated approach such as the EU Digital COVID Certificates help travellers to avoid quarantine, which in turn helps air travel to increase.

The dramatic drop in traffic affected all members of the aviation value chain unexpectedly. For the Single European Sky, the decrease in traffic meant that reaching the 2020 performance plan targets that were provisionally in force were less of a challenge in the environment and capacity key performance areas, while safety performance remained stable despite new types of pandemic related safety challenges.

Cost-efficiency proved more difficult: in most Member States, the cost of air navigation service providers (ANSPs) in 2020 remained at almost 2019 levels with many ANSPs claiming that their costs were substantially lower than budgeted for in 2020. However, budgets made during good times should be something to look at in the rear-view mirror and not as a point of reference for re-planning – particularly when the crisis continues to persist. Several ANSPs substantially increased their costs in 2020 and plan to remain on this track during the coming years, which is difficult to accept for the PRB. High air navigation charges may decide the economic viability for an airspace user to operate a flight. Unfortunately, these fees will remain very high during RP3 because airspace users, and ultimately passengers, will have to cover the revenue gaps ANSPs incurred in 2020 and 2021.

The lower traffic levels observed in 2020 and 2021 continue to be an opportunity for structural changes and accelerating the implementation of the ATM Master Plan i.e. establishing cross-border cooperation and allowing more flexibility to quickly respond to traffic variations.

Last but not least, the 2020 figures show that ANSPs, airspace users, and airports still need to contribute to a better environmental performance, especially in the terminal area. The aim remains to reduce the environmental impact of each and every flight.

On behalf of my fellow PRB members, I would like to thank our colleagues from Eurocontrol, namely the Network Manager and the Performance Review Unit, our colleagues from the European Union Aviation Safety Agency (EASA), and finally the PRB Support Team for their invaluable contributions to this report.



Regula Dettling-Ott  
PRB Chair

## EXECUTIVE SUMMARY

This report presents the results of the monitoring of the air traffic service providers of the Single European Sky Member States for the year 2020. The first priority of monitoring is to assess whether Member States achieved their targets in the key performance areas of safety, capacity, environment, and cost-efficiency. Other than Malta, all Member States submitted their data for this report in June 2020. It also includes data on safety, environment, and capacity made available by EASA and Eurocontrol/Network Manager.

The data confirms the finding of the Interim Monitoring Report the PRB published in February 2021<sup>1</sup>: ANSPs differed vastly in their reactions to the pandemic. While all ANSPs maintained their services, which remained a challenge during the pandemic, some showed little room for change against their plans prior to the pandemic and existing ways of working. Others by now have implemented new processes and adapted their structure. These mixed reactions are mirrored in the monitoring results.

### Traffic 2020

- In 2020, ANSPs handled 4.5 million flights compared to 10.8 million flights in 2019.
- Service units in 2020 amounted to 52.6 million compared to 125 million in 2019.

### Safety/EASA observations

- Safety remains the highest priority and ANSPs handled safety well since the outbreak of the pandemic. Safety levels overall remained as before COVID-19.
- 13 ANSPs achieved the RP3 targets for the Effectiveness of Safety Management for all management objectives (based on the new revised questionnaire used in 2020).
- In view of the lower traffic levels, incidents and accidents related to the provision of air navigation services decreased, and the rate of occurrences remained stable compared to 2019.

### Environment

- Horizontal flight efficiency in the SES area improved with lower traffic and Member States met the 2020 Union-wide target. Lower traffic levels led to excess capacity and airspace users were able to fly more efficient routes, which contributed to the improvement of environmental performance.
- Performance would have been better if 11 Member States had achieved their expected contribution towards the Union-wide target.
- Data shows that structural problems continue to impact environmental performance: as soon as movements start to increase, extension of routes also increases even if traffic levels remain far below 2019 levels.
- Airspace users should continue to plan shorter routes for their flights when they are made available by ANSPs.
- Terminal performance (holding & taxiing times and continuous climb/descent operations) improved due to fewer movements, which caused less congestion at airports. Going forward, airports will need to offer more terminal capacity as traffic grows to maintain the improved performance.

### Capacity

- From January to February 2020, traffic levels remained at forecasted levels – and capacity was insufficient. Like in 2018 and 2019, there were high delays during these “normal” months due to a lack of capacity, which indicates that the problems encountered in 2019 continued to affect performance in early 2020.

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<sup>1</sup> [Monitoring Report on the Financial and Operational Impact of COVID-19 on the SES, March 2021.](#)

- After the sharp drop in traffic in March 2020, there were only minimal delays, which meant that most Member States/ANSPs achieved the 2020 delay breakdown values.
- The reduction of traffic resulted in excess capacity in 2020, indicating that ANSPs had only limited means to adapt their capacity to lower demand.
- Three Member States still failed to achieve their expected contribution to the Union-wide target: France, Spain, and Portugal.
- With reduced traffic, weather related delays disappeared suggesting that weather does not directly cause delays on its own. It is the combination of lack of capacity to deal with difficult weather situations and higher traffic demand that causes delays.

#### Cost-efficiency

- The data submitted by Member States for 2020 shows that they reduced their costs by only 4% compared to 2019 actual costs (with 58% traffic decrease in service units).
- Compared to the draft 2019 performance plans submitted before COVID-19, Member States reduced their 2020 costs by 13%.<sup>2</sup>
- ANSPs were aware of the sharp drop in traffic as early as March 2020, meaning that they had enough time to adapt and lower their costs for most of the year.
- With the sharp drop in revenues and Eurocontrol granting airspace users a delay to pay the air traffic management (ATM) charges for some months of 2020, ANSPs encountered a steep decline in revenues. The monitoring data shows that ANSPs managed the gap in revenues in different ways using either their own resources, loans or injection of equity by owners.
- A substantial gap in revenue remains, which airspace users will have to cover as of 2023 for many years. Given the dire financial situation of most of the airspace users, ANSPs should contribute to the recovery of European aviation by adapting their costs in their revised performance plans. The adjustment to the unit charges will come into effect as early as 2023 provided the Commission approves the revised performance plans.

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<sup>2</sup> The plans submitted in 2019 were not been adopted before the pandemic broke out as the Commission found most to be inconsistent with the pre-COVID-19 2020 cost-efficiency target.

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## 1 ABOUT THE DOCUMENT

- 1 The PRB Annual Monitoring Report 2020 provides an analysis of the air traffic management performance of the Single European Sky (SES) in 2020, which was the first year of the third reference period (RP3).
  - 2 In Commission Regulation (EU) 2019/317 (herein referred to as the performance and charging regulation), monitoring is one of the primary tasks of the Performance Review Body (PRB). It ensures that Member States, the European Commission, and stakeholders are informed about how air navigation service providers (ANSPs) perform in relation to their performance targets.
  - 3 The legal basis for monitoring the performance of air traffic management in the SES area is defined in Article 11 of Regulation (EC) No 549/2004 (the Framework Regulation)<sup>3</sup>.
  - 4 The PRB Annual Monitoring Report 2020 is supported by four annexes which complement this Union-wide report with a more detailed analysis of performance at local levels:
    - Annex I – Member States' factsheets (produced by the PRB)
    - Annex II – Member States' detailed analysis for experts (produced by the Performance Review Unit)
    - Annex III – Safety report (produced by EASA)
    - Annex IV – Investments report (produced by the PRB)
  - 5 To produce the Annual Monitoring Report 2020, the PRB used data provided and verified by Member States, the Performance Review Unit of Eurocontrol (PRU), the Network Manager (NM) and the European Union Aviation Safety Agency (EASA).
- ### 1.1 Exceptional measures Regulation
- 6 The Commission set targets at Union-wide level and Member States at local (national or FAB) levels. Local targets for each key performance indicator (KPI) and year of RP3 are defined by the National Supervisory Authority (NSA) in the performance plan of each Member State or FAB before the start of the reference period.
  - 7 For RP3, Member States submitted their draft performance plans in October 2019. The Commission assessed them and found most of them inconsistent with the Union-wide targets and the Network Manager's breakdown of the Union-wide target into local reference values (for the environment and capacity key performance areas).<sup>4</sup> The Commission sent the assessment with a draft decision to the Member States in March 2020. With the onset of the COVID-19 pandemic, the Commission decided to set out exceptional measures due to the COVID-19 crisis and withdraw the decision.
  - 8 The Commission and the Member States adapted the performance and charging scheme to respond to the unprecedented drop in air traffic. Commission Implementing Regulation (EU) 2020/1627<sup>5</sup> introduced exceptional measures modifying the performance and charging scheme for RP3, which prepared the way to revise the RP3 Union-wide targets adopted in 2019 and subsequently the draft performance plans prepared in October 2019. Member States will have to submit their revised draft performance plans by 1<sup>st</sup> October 2021.
  - 9 Whereas the PRB would normally monitor performance in relation to the targets in the draft 2019 performance plans, it must now take into account that these plans were not approved and that revised draft performance plans will be submitted by 1<sup>st</sup> October 2021, covering the entire period of RP3 (2020-2024).
  - 10 For the safety KPA, the PRB compares performance against the RP3 Union-wide targets throughout the monitoring reports.
  - 11 For the environment and capacity KPAs, performance is measured against the Union-wide targets and local reference/breakdown values in this document and Annex I. Annex II compares the actual performance against the provisional targets

<sup>3</sup> Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky (the framework Regulation)

<sup>4</sup> The Network Manager publishes local reference values which breakdown the Union-wide target to a local level. If all Member States achieve the performance suggested by the local reference values then, collectively, the Union-wide target would be achieved.

<sup>5</sup> Commission Implementing Regulation (EU) 2020/1627 of 3 November 2020 on exceptional measures for the third reference period (2020-2024) of the single European sky performance and charging scheme due to the COVID-19 pandemic

within the draft 2019 performance plans. This provides a complete overview of performance in 2020.

- 12 Monitoring cost-efficiency for 2020 poses an additional challenge, because Implementing Regulation (EU) 2020/1627 defines a combined year for 2020 and 2021. Cost-efficiency performance against the targets can thus only be monitored in 2022. This report monitors the actual costs in 2020 against the actual costs 2019, which is an important comparison to make in order to understand the flexibility of the air navigation services cost base and efforts to reduce costs to suit the reduced traffic.

## 2 TRAFFIC SITUATION IN 2020

- IFR movements in 2020 were 42% lower than the base forecast.
- Service units in 2020 were 40% lower than the base forecast.
- The traffic forecast for the remainder of RP3 is uncertain with traffic most probably returning to 2019 levels only after the end of the reference period.

### 2.1 IFR movements

- 13 The number of flights operated under instrument flight rules (IFR) within the Single European Sky (SES) airspace reduced substantially in 2020 (Figure 1). Prior to the pandemic, 10.8 million IFR movements were expected according to the February 2019 STATFOR base forecast for 2020, which was more than the actual IFR movements managed in 2019.

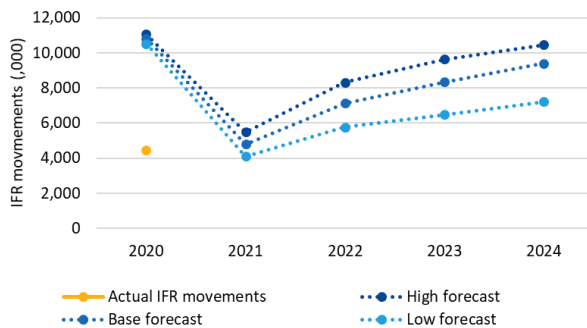


Figure 1 - Actual Union-wide IFR movements compared with the STATFOR high, base and low forecasts (source: Eurocontrol Seven-Year Forecasts; 2020 forecast data is based on the February 2019 edition while 2021 and onwards forecast data is based on the May 2021 edition), showing that IFR movements in 2020 were substantially lower than the forecasts Member States used to plan for RP3.

- 14 Instead, only 4.5 million IFR movements were managed in 2020, which is 42% less than the base forecast suggested. This sudden and sustained drop in IFR movements impacted key performance indicators and performance indicators that gauge the performance of air navigation service providers (ANSPs).
- 15 For the remainder of RP3, there is great uncertainty as to the expected demand for air navigation services. The May 2021 high forecast indicates that IFR movements will reach 10.5 million in 2024, while the low forecast suggests that it will reach 7.2 million. The base forecast for 2024 suggests that IFR movements will remain below the 2019 levels (9.4 million vs. 10 million IFR movements respectively).

### 2.2 Service units

- 16 Traffic growth is not only measured in terms of IFR movements, but also in terms of service units, which are calculated using the maximum take-off weights and distances flown by aircraft. Thus, an increase in service units does not necessarily mean more workload for ANSPs because airspace users may be operating larger aircraft.

- 17 In 2020, 52.6 million service units were managed compared to 125 million service units in 2019. However, similarly to the impact on IFR movements, the result of the pandemic was a drop in service units far below the February 2019 STATFOR low forecast (Figure 2).

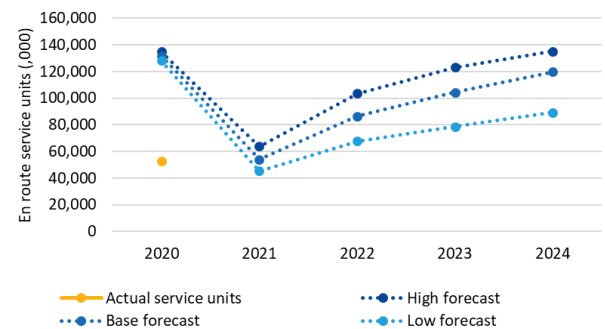


Figure 2 - Actual Union-wide service units compared with the STATFOR high, base and low forecasts (source: Eurocontrol Seven-Year Forecasts; 2020 forecast data is based on the February 2019 edition while 2021 and onwards forecast data uses the May 2021 edition), showing that service units in 2020 were substantially lower than the forecasts that were used to plan for RP3.

- 18 With respect to service units, there is great uncertainty as to how they will develop for the remainder of RP3. According to the May 2021 high forecast, service units will reach 135 million in 2024 while the low forecast suggests it will reach 89 million. The base forecast for 2024 suggests that service units - like IFR movements - will remain below 2019 levels (120 million vs. 125 million service units respectively).



### 3 SAFETY

- 13 ANSPs achieved the EoSM targets on all management objectives for RP3 in 2020.
- Rate of accidents and serious incidents remained at the same level as in 2019.
- Only nine ANSPs reported using some form of automated safety data recording systems for occurrences.

#### 3.1 Effectiveness of Safety Management

- 20 Safety is monitored through one key performance indicator (KPI): the effectiveness of safety management (EoSM) of the ANSPs.<sup>6</sup> The EoSM KPI measures the minimum level of the effectiveness of safety management of the following safety management objectives (MOs): safety policy and objectives, safety risk management, safety assurance, safety promotion, and safety culture. The KPI is assessed at ANSP level.<sup>7</sup>
- 21 2020 is the first year that the EoSM for ANSPs was measured using a revised set of questions to determine the minimum level of maturity for each management objective. Furthermore, the levels of maturity were rescaled for RP3. In RP2, they ranged between level A and E whereas the levels now range between A and D (with level D being the best performance).
- 22 The effect of rescaling the EoSM levels is shown in Table 1. Member States that achieved level E in 2019 were anticipated to achieve level D in 2020 and Member States achieving level D in 2019 were anticipated to achieve level C in 2020 and so on for each level. These anticipated levels of maturity imply that Member States maintained the safety maturity of 2019.

EoSM levels achieved by ANSPs by safety management objective in 2020 vs. 2019					
Safety Management Objective	Year	EoSM Level B	EoSM Level C	EoSM Level D	EoSM Level E
Safety Culture	2019	0	5	22	4
	2020	8	16	7	n/a
Safety Policy and Objectives	2019	0	2	27	2
	2020	8	17	6	n/a
Safety Risk Management	2019	0	2	21	8
	2020	2	14	15	n/a
Safety Assurance	2019	0	2	28	1
	2020	7	17	7	n/a
Safety Promotion	2019	0	1	28	2
	2020	6	17	8	n/a

Table 1 - Number of ANSPs achieving various EoSM levels in 2020 vs. 2019 (source: PRB elaboration), showing the effect of removing EoSM level E during RP3. The green cells reflect the number of ANSPs that achieved the Union-wide RP3 safety targets in 2020 (level C or D for safety culture, policy and objectives, assurance, and promotion, and level D for safety risk management). The table shows the 31 ANSPs that were monitored during RP2 although 33 ANSPs are monitored in RP3.

<sup>6</sup> The PRB monitors 33 ANSPs that include the main en route ANSP for each of the 28 Member States and MUAC, Ferronats, ANA LUX, and two small Polish ANSPs.

<sup>7</sup> EASA's supporting material for RP3 included one additional management objective addressing interdependency with other KPAs. This objective is not covered by the performance and charging Regulation and no targets were set. For 2020, four ANSPs were at level B, 16 ANSPs at level C and nine at level D. ANSPs should continue maturing this management objective particularly as the pandemic affected their financial and operational resources that could impact safety. For further details see Annex III.

23 Comparing the performance of ANSPs in each individual management objective between the end of RP2 and the first year of RP3 shows that, unfortunately, more achieved maturity level B in 2020 than expected for all safety management objectives other than safety risk management.

24 For the safety risk management objective, the achieved levels were higher than Member States planned to achieve in their draft 2019 performance plans. Six ANSPs planned to achieve the safety risk management target in 2020, but 15 ANSPs reported achieving the target. The reason why nine additional ANSPs achieved the target that did not plan to do so is difficult to explain. Several exploratory reasons may apply alone or in combination:

- ANSPs may have improved their change management processes, including safety risk management to ensure compliance with Commission Implementing Regulation (EU) 2017/373<sup>8</sup> in 2020.<sup>9</sup> In its target setting report, the PRB noted that many ANSPs would be closer to achieving EoSM level D if ANSPs complied with this regulation in 2020.
- ANSPs may have been conservative when setting safety targets for 2020 in their draft 2019 performance plans as the EoSM questionnaire was not available during the drafting of the plans. Therefore, ANSPs were planning at a time when there was still uncertainty around the safety KPA.
- In many cases, the pandemic prevented on-site audit visits by the NSAs. Instead, these audits were conducted by desktop reviews, which may have affected the results.

25 Looking at all the safety management objectives together, in 2020, 20 ANSPs did not achieve the RP3 target of a minimum maturity level D in safety risk management and minimum maturity level C in all other management objectives (Figure 3).<sup>10</sup> Of those 20 ANSPs, eight ANSPs did not achieve the safety risk management and other MO targets (AustroControl, skeyes, Croatia Control, CYATS, NAVIAIR, DFS, HANSP, and ANA Lux), while the

other 12 ANSPs achieved the target in either safety risk management or all other management objectives but not both.

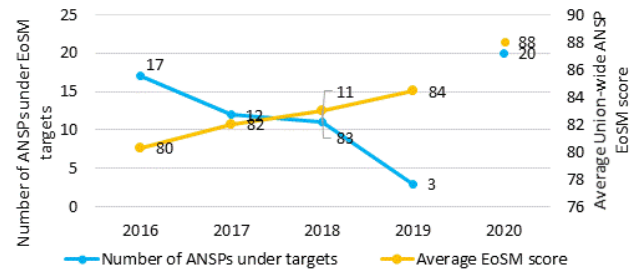


Figure 3 – Number of ANSPs not achieving their targets in the past five years along with their EoSM score (source: PRB elaboration), showing that the re-scaling of EoSM levels had an impact on the number of ANSPs achieving the targets.

- 26 Due to the reasons in paragraph 24, the PRB expects some adjustment to the ANSPs scoring in each of the management objectives in the second year of RP3, which could cause the achieved performance to change more than usual from year to year.
- 27 Detailed assessments of the KPI and PIs at State and ANSP level are available in Annex III including an overview of Member State compliance with reporting.

### 3.2 Occurrences

- 28 In addition to the EoSM, two performance indicators (PIs) related to occurrences are monitored at Union-wide level:
- The rate of runway incursions at airports located in a Member State with any contribution from air traffic services or communication, navigation, and surveillance services.
  - The rate of separation minima infringements where the air navigation service provider provides air traffic services.

29 Comparison of occurrence rates between 2020 and 2019 should be treated with caution as RP3 introduced changes that meant less occurrences are expected to be reported with the same performance i.e. now only those with a safety impact should be reported. Nevertheless, in 2020, both

<sup>8</sup> Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight

<sup>9</sup> Under these regulations, ANSPs were required to meet new common requirements that also includes elements of safety performance by 2<sup>nd</sup> January 2020.

<sup>10</sup> It should be noted that the Average EoSM score for 2020 cannot be compared with 2019 due to the different method of calculating the score between RP2 and RP3.

the rates of runway incursions and separation minima infringements reduced by almost 50%. This was expected since there were less aircraft in the skies (Figure 4). The rates of runway incursion and separation minima infringement occurrences at Union-wide level are sensitive to the number of movements and flight hours respectively, which both fell significantly. At a local level the rates are more sensitive to the actual number of occurrences and just one occurrence based on a small number of movements or flight hours may give an increasing rate.

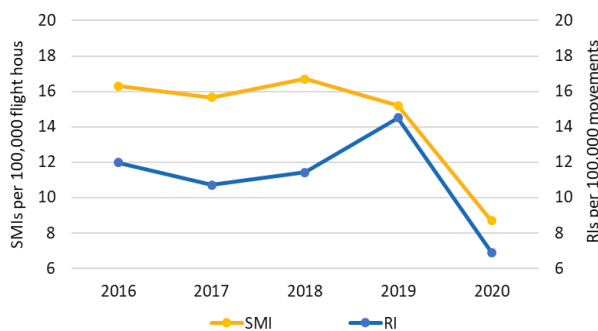


Figure 4 - Union-wide occurrences rate for separation minima infringement (SMI) and runway incursions (RIs) in the period 2016 to 2020 (source: PRB elaboration), showing the reduction in the occurrence rate between 2019 and 2020 for both SMIs and RIs.

- 30 At local level, the results among Member States differ considerably: some were only able to reduce occurrences slightly or even increased the rates of occurrence and others reduced occurrences substantially. This is further explored in Annex I and Annex III.

### 3.3 Automated Safety Data Recording Systems

- 31 The use of automated safety data recording systems by ANSPs as a component of their safety risk management framework is a performance indicator that measures how systematic safety management is in various Member States.
- 32 In 2019, 11 ANSPs reported using some form of automated safety data recording system. In 2020, nine ANSPs reported using some form of automated safety data recording systems for recording separation minima infringement occurrences, and three ANSPs reported using them to record both separation minima infringements and runway incursions.
- 33 The difference can be explained by the U.K., which in 2019 used such tools, but is no longer part of the reporting, and Ireland that reported its ANSP

is testing such a system, but implementation has not been finalised yet.

- 34 No progress on this PI was achieved over the past year. The PRB concludes that more ANSPs should use automated safety data recording systems to improve safety management and all should be reporting data in a clear manner.

### 3.4 Serious incidents and accidents related to ANS provision, and with ANS contribution

- 35 The number of accidents and serious incidents in 2020 decreased as expected compared with 2019 due to lower levels of traffic (Figure 5 and Figure 6, next page).
- 36 However, when considering the rate of accidents and serious incidents, the rate remains at a similar level in the previous years. This is the case both for ANS-related accidents and serious incidents when ANS was a contributing factor.
- 37 The specifics of the accidents and serious incidents seen in 2020 is further elaborated in Annex III.

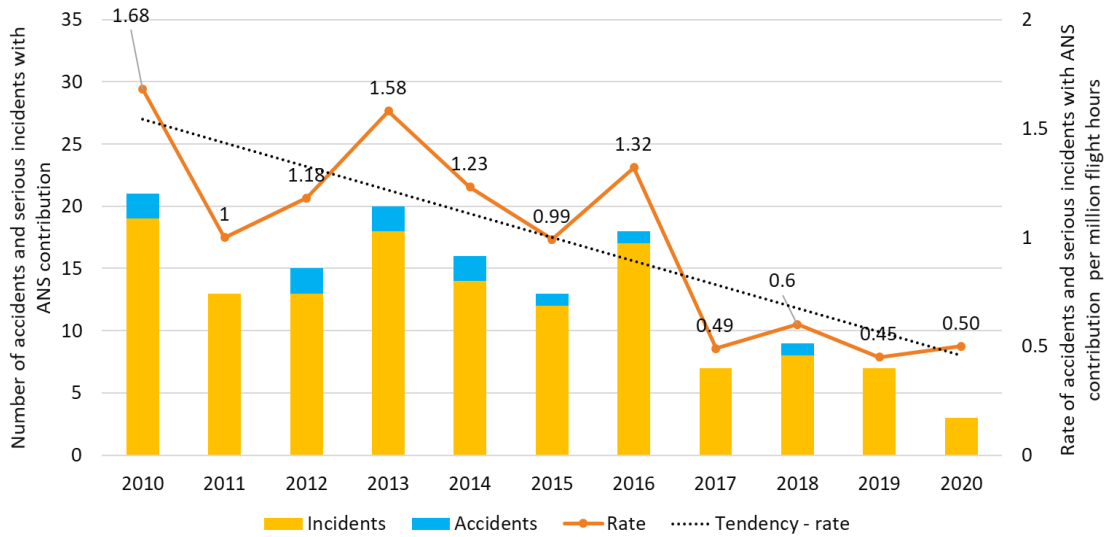


Figure 5 - Union-wide accidents and serious incidents with ANS contribution (source: EASA), showing that the rate of occurrences remained stable since 2017, but the number of occurrences has fallen considerably in 2020. 'Contribution' means that the ATM system had a role to play in causing the occurrence.

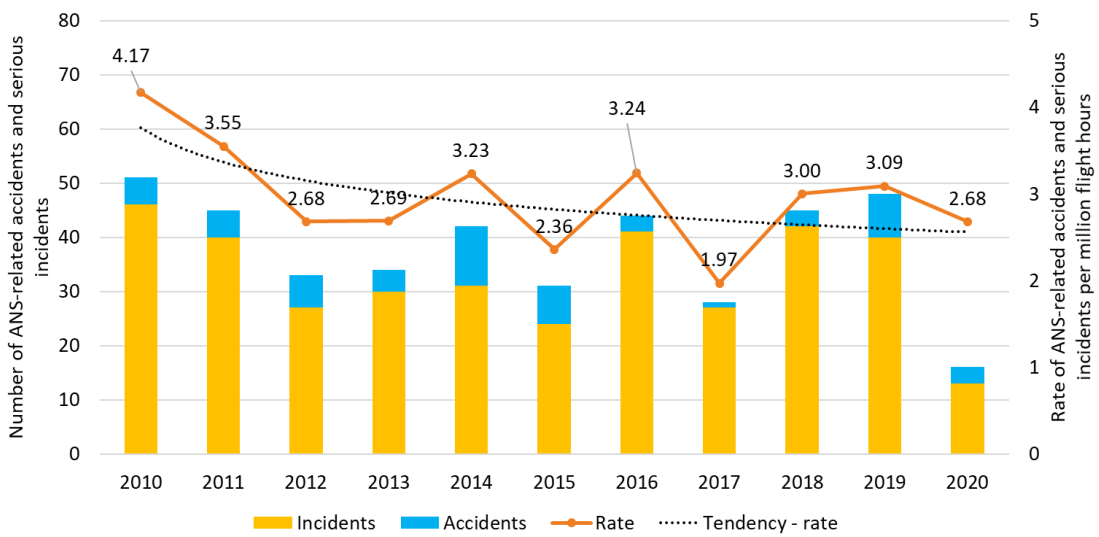


Figure 6 - Union-wide accidents and serious incidents related to ANS provision (source: EASA), showing that the rate of occurrences remained stable since 2012, but the number of occurrences has fallen considerably in 2020. 'Related' means that the ATM system may or may not have had a contribution to the given occurrence, but it may play a role in preventing or ameliorating similar occurrences in the future.

## 4 ENVIRONMENT

- Fewer IFR movements and the removal of U.K. data helped Member States reach the 2020 KEA target.
- The improved performance was largely due to the fall in traffic rather than intrinsic improvements and better performance was possible.

### 4.1 En route performance

- 38 Environmental performance is measured through one KPI: KEA (actual horizontal flight inefficiency), which is a ratio between the horizontal length of the flown routes and the so-called achieved distance. At Union-wide level, the achieved distance is the same as the great circle distance.
- 39 In 2020, the Union-wide KEA target was achieved by 0.02 percentage points (Table 2).

Environmental Performance 2020		
	Union-wide target	Achieved performance
<b>KEA actual horizontal flight inefficiency</b>	2.53%	2.51%

Table 2 - Comparison of 2020 Union-wide environment targets and actual environment performance.

- 40 Compared to historical performance, the 2020 performance is an improvement (Figure 7). The previous best KEA performance in the past five years was in 2017, when Member States achieved 2.68%. Fewer IFR movements, due to the pandemic and the removal of the U.K.'s data helped Member States reach the 2020 KEA target.

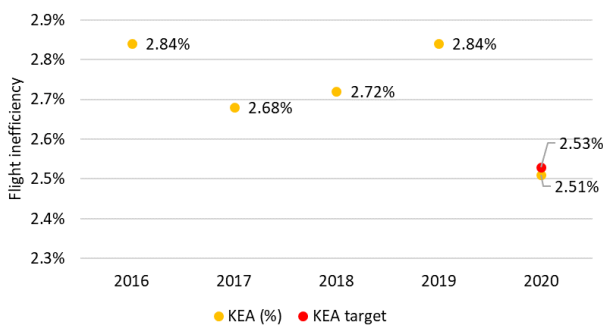


Figure 7 - KEA performance over the past five years (source: PRB elaboration), showing Member States' performance improved in 2020 to achieve the Union-wide target.

- 41 In addition to measuring the actual horizontal flight inefficiency (KEA), two performance indicators help explain the environmental performance as measured by KEA: the shortest constrained

route (SCR) and the planned horizontal flight efficiency (KEP). SCR indicates the shortest available routes that could have been planned by airspace users considering airspace constraints. KEP indicates the efficiency of airspace users' planned routes. Neither performance indicator directly relates to the output of CO<sub>2</sub> but helps to explain the constraining factors that limit KEA performance, which does directly relate to the output of CO<sub>2</sub> performance.

- 42 Looking at the yearly SCR and KEP values (Figure 8), there is a trend of steady improvement in airspace availability and airspace users' planning. The data shows that Member States and the NM improved the route network and airspace availability to reduce the SCR while airspace users took advantage of these new shorter routing opportunities.

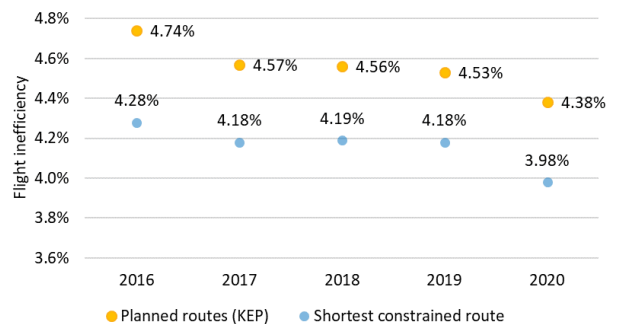


Figure 8 - KEP and SCR performance over the past five years (source: PRB elaboration), showing airspace users took advantage of improved airspace availability offered by Member States.

- 43 To better understand the excess planned and flown distances in 2020, Figure 9 (next page) analyses the monthly performances of KEA and KEP. It shows that the KEA target was achieved in eight months of 2020. Performance in January, February, July, and August 2020 did not achieve the target. The reasons for January and February 2020 performance falling short of the target are similar to the reasons outlined in the PRB's previous annual monitoring reports (i.e. capacity issues, growing traffic, and trade-offs with other KPAs). During July and August 2020 when there were

substantially fewer IFR movements to manage and little to no delays generated the targets should have been achieved.

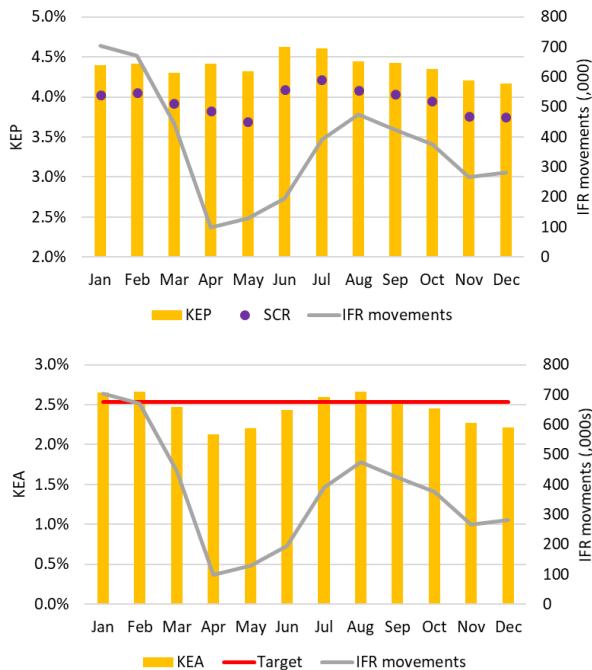


Figure 9 - Monthly KEP, KEA, SCR performance in 2020 (Source: PRB elaboration), showing the KEA target was not achieved in January, February, July, and August 2020.

- 44 The data shows the following features which help to explain performance in July and August 2020:
- The SCR in July was the highest throughout 2020 despite less traffic compared to January 2020. This shows Member States were not able to offer better airspace availability as traffic gradually recovered.
  - Thousands of route restrictions were lifted during 2020, which improved the SCR, however, many of these were in areas with low traffic and therefore had little impact on environmental performance. Better co-ordination of RAD improvements may have improved the situation.<sup>11</sup>
  - Airspace users did not plan the shortest possible routes, which in turn caused longer flown distances. In certain cases, this may be more environmentally beneficial i.e. favourable wind patterns.
  - During the height of the pandemic, stakeholders and their staff impacted by lockdowns and social distancing measures may have resulted in resource constraints that

meant optimisation in terms of CO<sub>2</sub> were of a lower priority.

- 45 Overall, many Member States should have performed better than they did in 2020. Given the reduced traffic, RAD relaxations, removal of the U.K.'s data, and fewer network disruptions, Member States should have exceeded the target by a greater margin. This conclusion is further reinforced by the fact that many Member States did not achieve their local reference values in 2020. Austria, Bulgaria, France, Greece, Hungary, Italy, Malta, Portugal, Romania, Slovakia, and Norway did not achieve their 2020 KEA reference value. Out of these Member States, Bulgaria, France, Greece, Malta, and Romania missed their 2020 reference values by over 10%.

#### 4.2 Additional time spent taxiing out and holding in terminal airspace

- 46 Member States are required to report data for the additional time airspace users spent in terminal airspace and taxiing out at regulated airports. The additional times are measured as the amount of time airspace users spent waiting beyond the 'unimpeded' or normal airfield taxi-out and holding times when there is no congestion.
- 47 In 2020, less than half of the regulated airports (i.e. those subject to performance monitoring) reported the required data for the additional time spent in terminal airspace and additional taxi-out time. However, given that all major European airports reported the required data, the submitted data on environmental performance at airports covers almost all of the Union-wide ground IFR movements. Thus, the available data provides a good indication of the overall Union-wide environmental performance at regulated airports.
- 48 Nonetheless, it is crucial for assessing local performance that all Member States report the data for their regulated airports.
- 49 Airspace users spent on average 0.98 minutes per flight in additional holding time and 1.80 minutes per flight in additional taxi-out time, which combined is a 40% improvement compared to 2019 (Figure 10, next page). Since no airport made large

<sup>11</sup> RAD is the route availability document that described all of the airspace route restrictions in force and is agreed with the Network Manager.

increases in terminal capacity, all of the improvement can be attributed to the reduction in traffic and congestion at major airports.

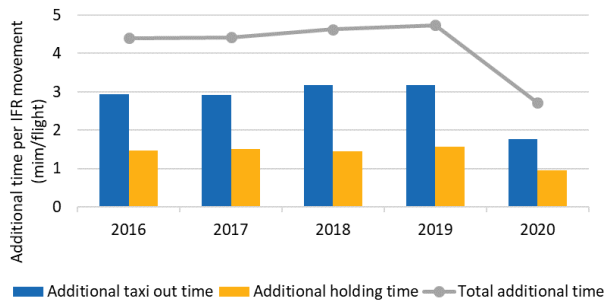


Figure 10 - Union-wide terminal environmental performance (Source: PRB elaboration), showing that additional taxi out time exceeded the additional holding times and performance in 2020 was 40% better than 2019.

### 4.3 Continuous descent and climb operations

- 50 Member States are required to report the share of arrivals applying Continuous Descent Operation (CDO) and Continuous Climb Operations (CCO) as defined by Eurocontrol's Taskforce on CCO/CDO operations.<sup>12</sup> This performance indicator measures how efficiently aircraft descend into or climb away from airports.
- 51 Flights that climb or descend at a continuous rate with no level flying generate less emissions and are more environmentally friendly. Several factors influence the ability to continuously climb or descend including weather, pilot skills, terminal area congestion, and aircraft characteristics.
- 52 The share of flights completing a CCO or CDO procedure improved from March onwards as traffic reduced (Figure 11). This performance improvement was short-lived and worsened as traffic grew in the summer months, but still remained better than in 2019. The overall performance improvement was marginal and did not last long, which is disappointing as the traffic situation remained depressed throughout 2020.
- 53 Similar to the conclusion for the additional time spent taxiing out or in holding patterns, data indicates that the improvements were mostly due to lower traffic and not structural changes. The challenge for airports will be to keep improvements when traffic grows and congestion returns.

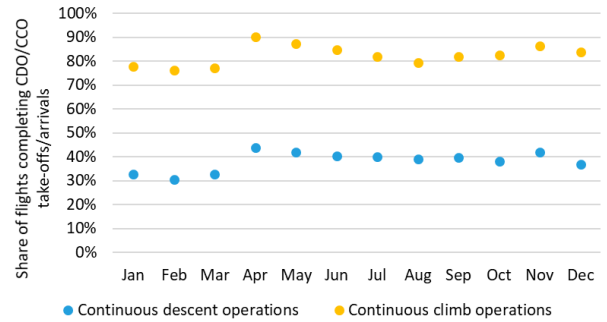


Figure 11 – Share of arrivals/departures applying continuous descent/climb operations (source: PRB elaboration), showing a good improvement from March onwards when traffic reduced.

<sup>12</sup> <https://www.eurocontrol.int/concept/continuous-climb-and-descent-operations>



## 5 CAPACITY

- Union-wide en route capacity target was reached mainly due to the drop in traffic.
- Terminal capacity performance improved, but all-cause departure delay was over 10 minutes per flight.
- Based on the delay performance in the first two months of 2020, ANSPs must focus on ensuring adequate service provision as traffic increases.

### 5.1 En route capacity

- 54 En route capacity is monitored by one KPI: the average en route air traffic flow management (ATFM) delay generated by en route area control centres (ACC).
- 55 In 2020, the Union-wide target for capacity was reached due to fewer IFR movements. The average en route air traffic flow management (ATFM) delay was 0.54 minutes per flight lower than the Union-wide target (Table 3).

2020 en route ATFM delay performance (min/flight)		
	Union-wide target	Achieved performance
Average en route ATFM delay per flight	0.90	0.36

Table 3 – Comparison of 2020 Union-wide en route capacity targets and actual capacity performances (minute per flight).

- 56 Compared to 2019, delays reduced by 91% while there were 52% fewer IFR movements. Delays in 2020 were mostly caused by ATC disruptions, ATC capacity, and non-ATC reasons (Figure 12).

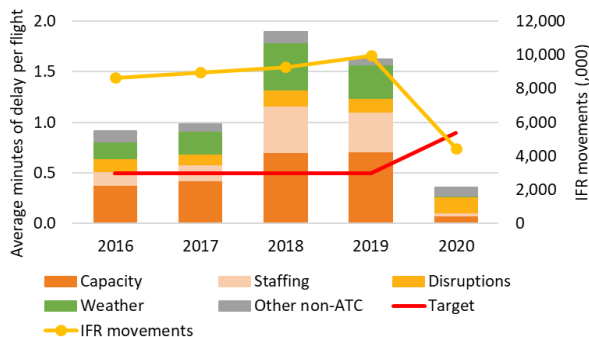


Figure 12 – En route ATFM delays by delay cause and year since 2016 (source: PRB elaboration), showing that delays decreased in 2020.

- 57 In 2020, the delays were mostly generated in January and February before travel restrictions were imposed due to the pandemic (Figure 13). During

the first two months of 2020, there was 0.67 minutes of delay per flight. ATC capacity and staffing accounted for over 40% of delays in January and February 2020, but the main driver was industrial action, which caused over 50% of the delays.

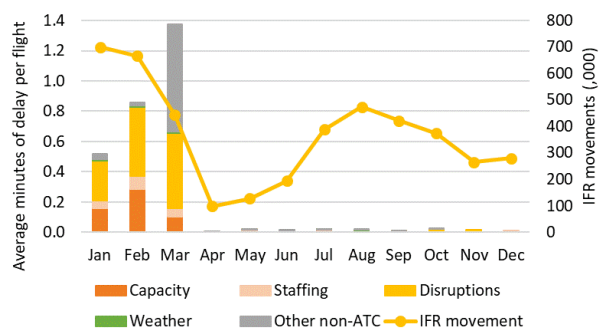


Figure 13 - Average monthly en route ATFM delay per delay codes and instrument flight rule flights (source: PRB elaboration), showing that most of the delays in 2020 were generated in January, February, and March. Traffic in March was less than usual as the pandemic developed.

- 58 March was an outlier with 1.32 minutes of delay per flight mainly caused by pandemic related measures implemented by Member States. Once traffic dropped and stakeholders adapted to the new situation, the actual average en route ATFM delay was only 0.01 minutes per flight for the rest of the year.
- 59 The number of IFR movements in January 2020 and February 2020 were similar to the number of IFR movements in January 2019 and February 2019 respectively. Despite this similarity, year-on-year en route ATFM delays per flight increased in January 2020 and February 2020 by 22% and 42% respectively. This was driven by well-known capacity problems identified in the PRB Annual Monitoring Report 2019 (i.e. capacity shortages, staffing issues, and the significant impact of the industrial actions of ATC in France). The specific year-on-year monthly comparison of January and February is fair given these were not heavily impacted by the pandemic.



- 60 A third of the delays produced between April and December 2020 occurred in July 2020 when IFR movements doubled in comparison to June 2020. This shows that ANSPs struggled to cope with the transient and inhomogeneous development of traffic during 2020.
- 61 The distribution of delays during 2020 differed slightly from previous years as the exceptional circumstances may have exacerbated individual events and delay spikes (Figure 14). The percentage of flights with delays less than 15 minutes increased to 65% in 2020 from 63% in 2019. The share of flights with delays longer than 30 minutes increased by four percentage points to 16% compared to 2019. This increase is most probably due to the increased share of disruption related delay reasons, which typically cause longer delays.

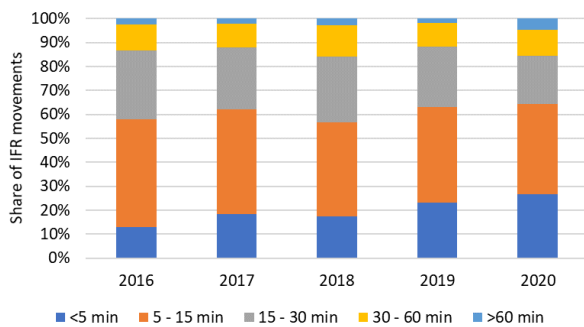


Figure 14 – The share of delayed flights that experienced less than or more than 15 minutes of overall delays (source: PRB elaboration), showing that the distribution of delays changed slightly towards shorter delays.

- 62 Most ACCs - especially those highlighted in previous years as high delay contributors - improved their performance in 2020. Some ACCs continued performing at the same level as 2019 or worse. While Marseille ACC improved significantly in 2020 compared to 2019 (1.71 minutes compared to 0.50 minutes), Paris ACC performed worse in 2020 with 0.37 minutes of delay per flight compared to 0.24 in 2019. In Germany, Karlsruhe improved from 1.67 minutes in 2019 to 0.23 minutes per flight in 2020. In Portugal, Lisbon ACC achieved a similar performance in 2020 as in 2019 (0.25 minutes per flight which exceeded the 2020 breakdown value for Portugal). In Spain, Barcelona and Madrid ACCs improved compared to 2019 while there was some reduction in performance in Canarias and Seville.
- 63 Delays generated by demand exceeding the available capacity were mostly eliminated in 2020 due to the reduction of IFR movements. The

deterioration of performance in France was due to the heavy industrial action early on in the year while for Spain pandemic related measures caused issues. In Portugal, the delays were partly related to state imposed pandemic measures and partly due to the transition to a provisional operations room.

- 64 These cases indicate that failing to provide adequate capacity even with low traffic levels requires additional measures from ANSPs. Annex I contains the PRB's local level analysis of capacity performance and explores ACC level issues in more detail.

## 5.2 Terminal capacity

- 65 Terminal capacity is monitored through one key performance indicator at the local level only: the average arrival ATFM delay generated by terminals per arrival.
- 66 In 2020, the average airport arrival ATFM delay reduced by 0.56 minutes per arrival - a 67% decrease compared to 2019 (Table 4). This decrease must be viewed within the context of the dramatic drop in traffic and various travel restrictions that closed airports for passengers. Since no airport reported major increases in terminal capacity, most, if not all, of this improvement can be attributed to the reduction in movements.

2020 and 2019 terminal delay performance (min/flight)		
	2019	2020
<b>Airport arrival ATFM delay per arrival</b>	0.83	0.27

Table 4 – Airport arrival ATFM delay per arrival showing a 67% improvement in 2020 compared to 2019.

- 67 The monthly distribution of airport arrival ATFM delay, as well as the distribution across delay causes, that occurred in 2020 is shown in Figure 15 (next page). Similarly to en route ATFM delays, most of the airport arrival ATFM delays were generated in the first three months of 2020 before the pandemic related restrictions were enforced. Weather was the key driving factor of these delays, which is expected due to the winter airport operations.
- 68 After March 2020, when movements reduced drastically due to travel restrictions, airport arrival

ATFM delays diminished. Once movements increased during the summer months, airport arrival ATFM delays were generated despite airports having to deal with less than half the normal movements. This indicates that there was less excess capacity in terminal airspace than in en route airspace. It also suggests that airports are more prone to local disruptions and capacity issues or had a poorer operational response.

69 Although terminal capacity is not subject to Union-wide target setting, it should remain a focus of capacity improvement measures of ANSPs and Member States as it is targeted at the local level and is a crucial node in the air traffic management network.

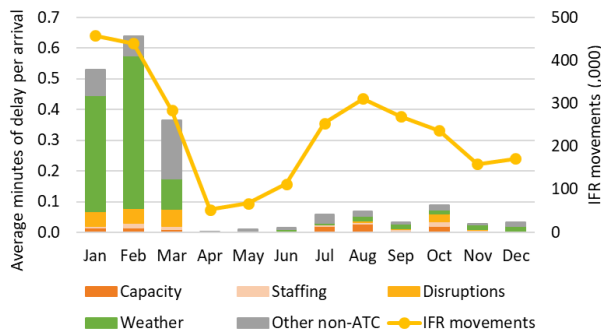


Figure 15 - Average airport arrival ATFM delay per delay codes, compared to instrument flight rule arrivals (source: PRB elaboration), showing the weather code was the highest driving factor behind arrival ATM delays in almost all months of 2019.

### 5.3 Gate-to-gate delay analysis

70 A gate-to-gate delay analysis that combines en route and terminal capacity performance helps to understand how the different types of sources of delay and flight time extensions add together to impact performance. It also enables stakeholders to better understand capacity challenges.

71 Three performance indicators defined in the performance and charging Regulation are used to illustrate gate-to-gate delays:

- All cause pre-departure delays incurred due to holding an aircraft at the stand. All cause pre-departure delays include ATFM delays (en route ATFM delays and airport arrival ATFM delays) that were discussed in sections 5.1 and 5.2.
- Additional taxi-out time due to airfield queuing.

- Additional holding time before landing due to runway throughput constraints (additional ASMA time).

72 The results for these performance indicators for 2020 are shown in Table 5. On average, airspace users were delayed by 12.81 minutes per flight in 2020, of which 0.62 minutes per flight were caused by en route and airport ATFM regulations – which are the delays assessed under the performance and charging scheme and counted within the all cause departure delay group.

Gate-to-gate delay performance (minutes/flight) 2019 and 2020		
	2019	2020
All cause departure delay per departure	N/A	10.07
Additional taxi-out time per departure	3.56	1.79
Additional ASMA time per arrival	1.83	0.95
<b>Total</b>		<b>12.81</b>

Table 5 - Values of gate-to-gate delay components in 2019 and 2020. All cause departure delay was not monitored during RP2; therefore, no comparison can be made with 2019.

### 5.4 Capacity Incentive schemes

73 The monitoring reports received from each Member State normally contain information on the results of the capacity incentive schemes applied upon the en route ATFM delay per flight and arrival ATFM delay per flight KPIs. However, based on the exceptional measures Regulation, the incentive schemes will not apply for calendar years 2020 and 2021. The PRB will continue to analyse the incentive schemes in 2023.

### 5.5 Capacity related measures taken by ANSPs

74 The escalation of the pandemic and the subsequent drop in traffic triggered ANSPs to implement extraordinary measures, in an effort to scale operations and safeguard personnel. The reaction to the situation was not uniform: in fact, ANSPs have taken different approaches, when it came to decisions about staffing, changes to sector

opening schemes and capacity improvement projects. These measures result in a new status quo, which will significantly affect capacity performance in the coming years, thus it is important to understand them.

- 75 Based on the monitoring data submitted by Member States, the number of air traffic control officer (ATCO) full time equivalents (FTEs) decreased from 7,099 at the end of 2019 to 6,915 at the end of 2020 (i.e. a reduction of 2.6%). The reasons behind this decrease were postponed recruitment and training processes, reallocation of ATCOs to non-operational assignments, accelerated retirements, and changes in overtime and paid leave schemes. These measures were mainly driven by the decrease of traffic and revenues of ANSPs in 2020.
- 76 31 ACCs reported fewer ATCO FTEs while ten ACCs reported more ATCO FTEs in 2020 compared to 2019. Two ACCs reported no change in ATCO FTE numbers in 2020 compared to 2019. Italy was the only Member State that did not report its ATCO FTE numbers.
- 77 The number of sectors open at maximum configuration is used to determine the maximum capacity an ACC is able to offer. As from May 2020, ANSPs reported their sector opening schemes in the seasonal rolling Network Operations Plan (NOP) on a weekly basis. The sector opening schemes were adapted to respond to the decrease in traffic. The PRB analysis of the sector opening schemes revealed a mixed picture.
- 78 On average, ANSPs reported offering 50% of 2019's maximum number of sectors in May 2020 although the range was between 6% and 113% i.e. some ANSPs decided not to change sector opening schemes, resulting in an inhomogeneous response to the reduction in traffic that all Member States experienced. As traffic grew during the summer months of 2020, ANSPs managed to adapt promptly, and adjusted the sector opening schemes to cope with the demand.
- 79 As for capacity improvement measures and operational projects, Member States reported a mixed picture. Some Member States accelerated operational projects and transitioned to new systems, other Member States decided to interrupt such projects and postpone capacity improvement measures until traffic levels recover. Certain measures and decisions – such the accelerated

retirement of ATCOs, postponed or interrupted recruitment, and delayed training etc. are fully or partially irreversible.

- 80 The PRB highlights that training new ATCOs or implementing interrupted operational projects may take several years depending on the local specificities, thus NSAs must be wary that postponing these measures for too long may jeopardise the readiness of ANSPs to accommodate recovering traffic.

## 6 COST-EFFICIENCY

- 2020 Union-wide en route costs decreased by 4% compared to 2019 actual costs, despite a decrease of 58% in service units.
- 2020 staff costs decreased by only 4% compared to 2019.
- Some ANSPs showed a higher degree of flexibility in the cost base and should share best practices.
- Investments costs are 16% less than planned in the draft 2019 performance plans.

### 6.1 Union-wide en route costs

- 81 Union-wide en route actual costs for 2020 amounted to 6.0B€<sub>2017</sub>, whereas the actual costs in 2019 amounted to 6.3B€<sub>2017</sub>. Thus, the actions put in place by Member States responding to the 58% decrease in service units lowered the Union-wide actual costs of 2020 by approximately 4% compared to 2019.
- 82 The 2020 actual amounts are 3% lower than the forward-looking data submitted for the target setting process in December 2020. As expected by the PRB in its advice on the revised performance targets for RP3, Member States were conservative when they submitted the initial forward-looking data.<sup>13</sup>
- 83 Despite efforts to decrease costs against 2019, the drop in traffic due to the COVID-19 pandemic resulted in a +128% increase in the unit cost (Table 6).

2020 actual vs 2019 actual			
	2020	2019	Difference (%)
En route costs (B€ <sub>2017</sub> )	6.0	6.3	-4%
Service units (,000)	52,595	124,742	-58%
Unit cost (€ <sub>2017</sub> )	114.63	50.23	+128%

Table 6 - Comparison of 2019 and 2020 Union-wide actual values.

- 84 89% of the 2020 en route total costs were incurred by air navigation service providers, whose

actual costs decreased by 3% in 2020 compared to the actual costs 2019. With respect to the other entities, NSA costs increased by 8% with respect to 2019 mostly due to the creation of search and rescue (SAR) in Greece. Finally, Eurocontrol and MET costs remained stable compared to 2019.

- 85 At local level, most Member States decreased their 2020 cost base against 2019 actuals, 13 Member States achieved notable decreases ranging between -10% to -32% (e.g. Slovakia -32%, Austria -20%, Portugal -20%).<sup>14</sup> Some of these decreases can be considered exceptional and were only applicable at local level, however, it demonstrates that flexibility in ANSPs' cost structure is possible. Member States should explore the possibility to ensure such flexibility is structural rather than exceptional as well as sharing best practises using existing platforms (e.g. NSA Coordination Platform - NCP) so that meaningful decreases can be achieved at Union-wide level.
- 86 Belgium and Luxembourg, Denmark, the Netherlands, Switzerland, and Sweden increased their cost base between +2% and +23%. Some of these changes may be due to new cost allocations compared to RP2 or in the Maastricht Upper Area Control Centre (MUAC) costs. However, Belgium and Luxembourg, the Netherlands, and Sweden did not achieve their cost-efficiency targets in 2019 either.<sup>15</sup> Therefore, these five Member States should closely analyse and monitor their situation. Specific details and PRB recommendations at Member State level are included in Annex I of this report.
- 87 According to the exceptional measures Regulation, 2020 and 2021 are treated as a single year for the cost-efficiency KPA. Similarly, the Union-wide (and local) targets are defined for the

<sup>13</sup> [Performance Review Body: Advice on the revision of performance targets for RP3.](#)

<sup>14</sup> Local level refers to the charging zone levels for each Member State.

<sup>15</sup> [PRB Monitoring Report 2019 and RP2 Overview.](#)

combined year. Therefore, the PRB will monitor the achievement of the targets in its Annual Monitoring Report 2021 based on the revised draft performance plans that Member States will submit by October 2021.

## 6.2 En route cost by cost category

- 88 This section analyses actual 2020 and 2019 costs across the various cost categories (Table 7).
- 89 The actual data for 2020 shows a 4% decrease in staff costs with respect to 2019 (-170M€<sub>2017</sub>). The decrease is relatively small compared to the traffic controlled, especially when one considers that the 2019 staff costs included a large portion of overtime to alleviate the capacity problems in the core areas of Europe. As a comparison, the 2020 costs related to staff are equivalent to the costs related to staff in 2012 when IFR movements were 49% higher than in 2020. This reflects the limited flexibility in managing the workforce and the fixed nature of providing air navigation services. However, at the local level the PRB observes that 14 Member States decreased staff costs by at least -10%, with one Member State reducing staff costs by -41%. The main measures put in place to decrease staff costs are the reduction of overtime, full time equivalents and salary/variable compensations.
- 90 Other operating costs in 2020 decreased marginally compared to 2019 actuals (-2%), this result is in line with the data submitted in December 2020. Other operating cost are the largest variable costs out of all the cost categories, including costs related to outsourced services, energy utilities, maintenance, building rent, travel and training expenses. At local level, 12 Member States decreased other operating costs by at least 10%. On the other hand, 11 Member States increased such costs (varying between +2% and +38%). Given that this cost category is largely composed of variable costs, the PRB expected further reductions. Detailed analysis is included in Annex I of this report.
- 91 Depreciation costs showed a small variation against 2019 actuals (-2%). More details are provided in Annex IV of this report.
- 92 Across the cost categories, the cost of capital in 2020 showed the largest percentage decrease compared to 2019 (-13%). However, the absolute amount is rather limited (-37M€<sub>2017</sub>). Even though 14 Member States showed a notable decrease of at least 10% in their cost of capital (varying between -10% and -58%), 10 Member States increased this cost. 13 Member States decreased the return on equity charged to airspace users. This demonstrates that some Member States were consistent with the PRB's recommendation not to charge a return on equity to airspace users in 2020.
- 93 Exceptional costs increased by +12% (+7M€<sub>2017</sub>). Two Member States decreased this cost category while Austria, Germany, Spain Canarias, and Spain Continental increased it (varying between +7% and +201%).
- 94 As already highlighted in the previous section, the PRB will advise the Commission on the adherence of the combined 2020 and 2021 costs to the Union-wide target when the revised draft performance plans are submitted for assessment in October 2021.

2020 and 2019 actual en route cost by cost category				
	2020 actual costs (M€ <sub>2017</sub> )	2019 actual costs (M€ <sub>2017</sub> )	Difference (M€ <sub>2017</sub> )	Difference (%)
<b>Union-wide total costs</b>	<b>6,028</b>	<b>6,266</b>	<b>-237</b>	<b>-4%</b>
<i>Staff costs</i>	3,746	3,916	-170	-4%
<i>Other operating costs</i>	1,339	1,365	-26	-2%
<i>Depreciation costs</i>	653	668	-15	-2%
<i>Cost of capital</i>	244	281	-37	-13%
<i>Exceptional costs</i>	65	58	+7	+12%
<i>Costs for exempted VFR flights</i>	19	23	-4	-19%

Table 7 – Comparison of 2020 and 2019 actual en route costs by cost category.

### 6.3 Costs related to investments

- 95 The costs related to investments include cost of capital, depreciation costs, and leasing costs for new and existing investments. Costs that are related to investment plans were included in Member States' draft 2019 performance plans. Member States will revise these investment plans in the revised draft performance plans to be submitted in October 2021. The analysis in this section compares the initial plans (i.e. the provisionally applicable 2019 draft performance plan) and the actual 2020 values related to the investments.
- 96 The 2020 actual costs related to investments amounted to 970M€<sub>2017</sub>. Member States spent 178M€<sub>2017</sub> (-16%) less than planned in their draft 2019 performance plans (1,148M€<sub>2017</sub>).<sup>16</sup> The differences can be explained mostly by delays in the planned investment due to pandemic-related lockdown measures and to preserve financial stability (i.e. cost cutting measures). As highlighted in the PRB's revised performance target report, the cost cutting measures should not impact the investment plans unless such investments are considered non-operational (e.g. new buildings). Investments in new technology are paramount to accommodate the traffic recovery and to provide the needed capacity.
- 97 In the draft 2019 performance plans, 12% of CAPEX is allocated to buildings (594M€<sub>2017</sub>). The PRB invites Member States to re-evaluate whether such investments are still a priority in their revised draft performance plans. At the same time, the PRB encourages the Member States to consider a stronger emphasis on technology to improve environmental and capacity performances.
- 98 As per the performance and charging Regulation, if the actual investment costs are lower than planned, the difference should be reimbursed to the airspace users. Conversely, when actual costs are exceeding the planned by no more than 5%, such additional costs can be recovered upon approval of the NSA and after consultation with airspace users. The adjustments should be made at charging zone level and yearly or over a period upon the decision of the NSA concerned.

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<sup>16</sup> The amounts refer to en route and terminal.



## 7 CIVIL-MILITARY DIMENSION

- Military demand for airspace reduced in 2020 with fewer hours of airspace reservations.
- The flexible use of airspace in 2020 was the same as previous years in that many reserved hours were not used.
- The use of conditional routes (CDRs) improved and was above 50% for the first time since 2016.

99 There are three performance indicators that measure how well military and civil users cooperate regarding the use of airspace, allowing for the flexible use of airspace (FUA):

- The effective use of military airspace calculated as the ratio of the initial allocated time for reservation or segregation from general air traffic, and the final allocated time used by the military for the activities requiring such segregation or reservation.
- The rate of planning via available airspace structures i.e. conditional routes (CDRs).
- The rate civil airspace users are actually using available reservable or segregable airspace i.e. conditional routes (CDRs).

### 7.1 Effective use of military airspace

100 The military always has priority for using military airspace. It is also important for airspace reserved for military use but ultimately not required to be released for civil flights i.e. the flexible use of airspace.

101 Demand for military airspace reduced in 2020 compared to previous years (Figure 16). In 2020, military authorities reserved airspace for a total of 388,116 hours.<sup>17</sup> 46% of these hours of reservation were not used, which is similar to previous years. With respect to the reserved areas, 80% of the total reservations were made by the militaries of five Member States (Czech Republic, Finland, Poland, Switzerland, and Spain).

102 Airspace not required for military use should be released as early as possible to enable airspace users to optimise their flights. Airspace that has the greatest potential to shorten routes and improve capacity for airspace users should be managed such that reservations that are not required are immediately released if not required for military activities. However, as discussed in section 4.1,

there is also an onus on airspace users to improve the effectiveness of their flight planning.

103 The impact of the effectiveness use of military airspace on KPA performance is unclear since it is influenced by the geographical location of the area reservations, namely whether that area affects major traffic flows. Additionally, airspace users can fly through some area reservations with ad hoc air traffic control clearance.

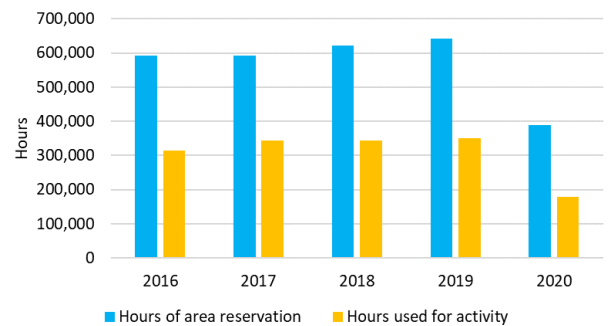


Figure 16 - Union-wide effectiveness of booking procedures (source: PRB elaboration), showing that many hours of military airspace reservations remain unused.

### 7.2 Rates of planning and usage of available military airspace

104 The previous section explored to what extent the military uses airspace it had reserved. This section considers how well airspace users utilise any military airspace that is made available.

105 Rate of Interest (RAI) represents the percentage of aircraft interested in filing flight plans to take advantage of an available conditional route (CDR) or an unallocated reserved/restricted airspace in the case of free route airspace environment.<sup>18</sup>

106 Rate of Actual Use of CDR (RAU) represents the percentage of aircraft having actually used an available CDR or having actually flown through an unallocated reserved/restricted airspace during a given time period.

<sup>17</sup> Full Union-wide data on the effectiveness of booking procedures was not submitted by Member States. This evaluation is based on 18 Member States reporting the required data. All Member States reported the data in 2019 and it is not clear why the same was not possible in 2020.

<sup>18</sup> An aircraft is interested in using CDR if the Network Manager determines that its use would lead to the shortest flight plannable route.

107 The data shows that airspace users are interested in using military airspace, but in the past did not make use of the available routings (Figure 17). This may be due to co-ordination and communication issues between civil and military ANSPs and the tendency for airspace users to proceed with their initial flight plans. Nevertheless, in 2020 the actual used airspace (RAU) was above 50% which is the highest it has been since 2016. The decrease in military flights and lower demand for airspace reservations could be the cause of this result.

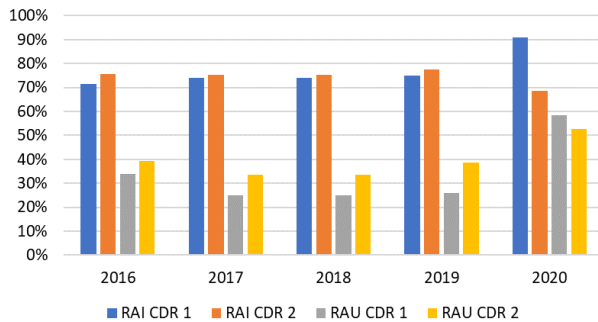


Figure 17 - Rate of interest and use of military airspace between 2016 and 2020 within the NM area (source: PRB elaboration), showing that interest in airspace made available by the military (CDRs) remained high and that the actual use by civil aviation (RAU) improved.



## 8 NETWORK FUNCTIONS

- The Network Manager should assess its safety performance using the correct methodology.
- The Network Manager did not achieve its environment target by 0.2 percentage points.
- The Network Manager's ATFM function saved 11% of delays in 2020.
- The Network Manager took cost containment measures and kept within the approved cost base.

108 In accordance with Article 19 of Commission Implementing Regulation (EU) No 2019/317, the Network Manager should draw up a Network Performance Plan (NPP) containing performance targets for the NM covering all KPAs, which are to be consistent with the Union-wide performance targets.

### 8.1 Safety

109 The safety key performance indicator for the Network Manager is the minimum level of the Effectiveness of Safety Management (similar to the effectiveness of safety management KPI described in section 3 for ANSPs).

110 In the draft 2019 Network Performance Plan, the Network Manager planned to achieve target level C or above in all management objectives other than safety risk management by 2023. For safety risk management, the Network Manager planned to achieve target level D by 2024.

111 The Network Manager measured its performance using the RP2 methodology, which is no longer applicable. The reported maturity levels are therefore not consistent with the RP3 regulations. Furthermore, the Network Manager did not report achieved levels for each EoSM management objective. Hence, the PRB has no data to support the monitoring of the NM in respect to performance for the safety KPA.

112 In addition to the key performance indicator, the Network Manager collects data on the so-called over-delivery of aircraft into sectors, where ATFM regulations are applicable.<sup>19</sup>

113 The NM reported that the over-delivery indicator decreased significantly in 2020, from 12.4% in 2019 to 7.4% in 2020 (Figure 18). The improved performance is mostly due to reduced traffic i.e. sectors were less likely to reach the capacity limits so that ATFM regulations were not needed.

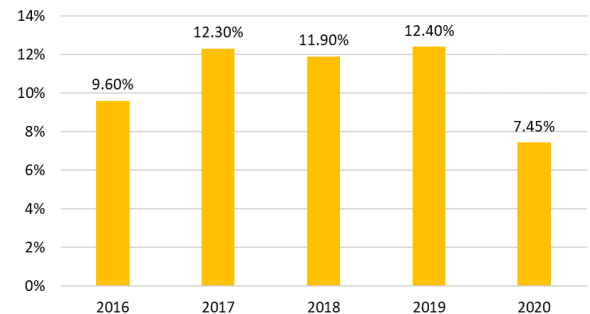


Figure 18 – Percentage of over-deliveries since 2016 (source: PRB elaboration), showing performance in 2017, 2018, and 2019 was above 10% but improved in 2020.

<sup>19</sup> An over-delivery situation occurs if the number of aircraft within a sector exceeds the safe capacity limit set by the Member State by more than 10%. It is calculated as the ratio of the total time that over-delivery situations occurred to the total time ATFM regulations were imposed.

## 8.2 Environment

- 114 The environment key performance indicator for the Network Manager is the KEP (similar to the environment performance indicator described in section 4 for ANSPs).
- 115 The Network Manager did not achieve its KEP target of 4.37% by 0.2 percentage points although it did improve relative to 2019 by 0.06 percentage points. The targets corresponding to the percentage point improvement set by the Network Manager along with actual performance are shown in Figure 19.

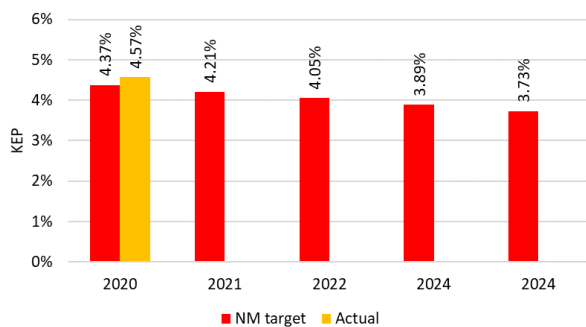


Figure 19 – Network Manager KEP target and performance achieved (source: PRB elaboration), showing the 2020 target was not achieved by 0.2 percentage points.

- 116 According to the Network Manager, the lifting of route availability document (RAD) restrictions during 2020 had less than half the intended impact. Ongoing issues at the border of the NM area (i.e. Ukraine) has a lasting effect on flight planning. These factors led to the performance not achieving the targets.
- ## 8.3 Capacity
- 117 There are two performance indicators that are defined to assess the Network Manager's performance. First, the share of en route ATFM delay savings due to collaborative decision making (CDM) network procedures and Network Manager Operations Centre (NMOC) actions.<sup>20</sup>
- 118 The second performance indicator is the percentage of arrival ATFM delay savings from the collaborative decision-making network procedures and Network Manager Operations Centre actions.
- 119 Although the draft 2019 Network Performance Plan was not adopted due to the COVID-19 pandemic, it defined the target values for the two KPIs

which are in force. The Network Manager did achieve the target values in both KPIs as shown in Table 8.

Network Manger capacity KPI targets and actual values in 2020		
	Target	Actual
Percentage of en route ATFM delay savings	10%	11%
Percentage of arrival ATFM delay savings	5%	6.91%

Table 8 – Comparison of capacity KPI targets and actual performance of the Network Manager (source: Network Manager).

- 120 The Network Manager Operations Centre actions and rerouting proposals saved 199,000 minutes of en route ATFM delay and over 75,000 minutes of arrival ATFM delay in 2020.
- 121 The percentage of IFR flights with ATFM delays above 15 minutes in 2020 decreased by four percentage points to 1.1% due to the decrease in the number of flights and the lower number of ATFM regulations compared to 2019.

## 8.4 Cost-efficiency

- 122 This section is based on the draft Network Manager Annual Report 2020. As the 2020 annual accounts of the Network Manager have not been audited yet, data in this section is not validated.
- 123 The report states that the Network Manager's approved 2020 budget is in line with the cost-efficiency target in the Network Manager's performance plan. The annual report states that the 2020 NM cost base for 2020 is within the approved cost base (212M€).
- 124 Taking the 2020 Network Manager Directorate budgeted costs (266M€) and the 2020 provisional outturn (252M€) presented in Table 9, the percentage financial outturn of the Network Manager Directorate is 94.8%.
- 125 The 2020 Agency Business Plan costs and provisional outturn by category are shown in Table 9.

<sup>20</sup> The network manager stated that delay savings were calculated conservatively and take into account re-rerouting proposals and NMOC direct action (i.e. forced overrides of ATFM regulations).

Cost category	2020 Agency Business Plan (M€)	Provisional 2020 out-turn (M€)
Staff cost	125.8	126.8
Operating	93.8	83.9
CAM indirect costs	27.5	24.7
Tax compensation and ancillary benefit distribution	17	16
Depreciation and cost of capital	8.4	6.8
Contract staff paid by operating	2.9	2.6
CAM indirect IT costs	-9.5	-8.6
<b>Total</b>	<b>265.9</b>	<b>252.2</b>

Table 9 - Comparison of Agency Business Plan and provisional costs according to cost categories (source: Network Manager).

## 9 CONCLUSIONS AND RECOMMENDATIONS

126 The key conclusions from the PRB monitoring of 2020 performance are summarised for each KPA in this section, followed by a specific PRB recommendation.

### 9.1 Safety

127 Based on the analysis presented in section 3, the PRB makes the following conclusions with associated recommendation:

128 **Conclusion 1:** More ANSPs than expected reported a low maturity level (B) for all management objectives other than safety risk management. This could be the outcome of a conservative approach by the ANSPs when replying to the EoS questionnaires, but equally interpreted as maturity levels degrading compared with RP2.

129 **SAF-1:** NSAs should ensure that the revised draft RP3 performance plans accurately reflect the maturity levels that a Member State can and should achieve in the remaining years of RP3.

130 **Conclusion 2:** The EoS data shows anomalies concerning the maturity levels reported for safety risk management. Many more ANSPs achieved target level D than was expected based on 2019 performance and what was presented in the draft 2019 performance plans. General feedback from the EASA standardisation oversight affirms this conclusion.

131 **SAF-2:** NSAs should ensure that the reported safety risk management maturity level reflects what is actually being performed at the ANSPs.

132 **Conclusion 3:** The use of a new questionnaire to determine achieved maturity levels may have led to misunderstandings by the ANSPs of the specific conditions to achieve certain levels of maturity, which NSAs were not able to detect.

133 **SAF 3:** NSAs should ensure that the achieved maturity levels for 2020 are revisited to provide the correct maturity and avoid reporting anomalies in 2021.

134 **Conclusion 4:** The Network Manager did not use the correct methodology to assess its safety performance in 2020.

135 **SAF 4:** The Network Manager should ensure that the maturity is reporting using the correct methodology.

### 9.2 Environment

136 Based on the analysis presented in section 4, the PRB makes the following conclusions with associated recommendation:

137 **Conclusion 1:** While the achieved KEA performance reached the target, performance could have been better. The main reason the target was achieved is the reduction in IFR movements and excluding U.K. data rather than operational improvements.

138 **ENV-1:** Member States that did not achieve their KEA reference values in 2020 should improve their environmental performance (i.e. offering more direct routes, improving airspace availability and managing terminal and en route interfaces better).

139 **Conclusion 2:** The shortest constrained route (SCR) and KEP continued to improve in 2020 in line with the trend since 2016. This shows that airspace users generally used better routing opportunities made available by ANSPs. In July 2020, the SCR indicator was better than in January 2020 when there was more traffic to manage. This shows that as traffic grows there is a risk that Member States are not prepared to sustain the improved environmental performance.

140 **ENV-2:** Member States should ensure that they are able to sustain the improved performance in 2020 for the remainder of RP3. 2020 data shows that more resource needs to be dedicated to ensuring airspace availability and direct routing.

141 **Conclusion 3:** Terminal environmental performance improved in 2020 with additional taxi-out and holding times almost halving compared to 2019. CCO/CDO performance improved during April 2020 but this was not sustained throughout the year. Almost all of the improvement in terminal performance was due to the fall in traffic rather than terminal capacity improvements.

142 **ENV-3:** Member States should be prepared to manage the expected growth in traffic including substantial improvements in the terminal area/gate-to-gate approach.

### 9.3 Capacity

- 143 Based on the analysis presented in section 5, the PRB makes the following conclusions with associated recommendation:
- 144 **Conclusion 1:** The first three months of 2020 showed an alarming picture with higher en route ATFM delays than in the same period of 2019. This indicates that serious underlying capacity issues are still present in the network even though the capacity target was achieved in 2020.
- 145 **CAP-1:** Member States, NSAs, and ANSPs should be encouraged to engage in measures to resolve long-standing capacity problems. The Commission should consider such measures with particular attention during the assessment of revised draft performance plans.
- 146 **Conclusion 2:** Three Member States (France, Portugal, and Spain) generated higher average en route ATFM delays in 2020 than their respective local breakdown values due to industrial actions and/or pandemic related measures. Industrial actions continue to heavily impact performance.
- 147 **CAP-2:** Member States should take all necessary measures to avoid disrupting the European ATM Network by industrial action and government restrictions.
- 148 **Conclusion 3:** Most ANSPs experienced difficulties in scaling down their operations when traffic levels reduced due to the travel restrictions in 2020. ANSPs also struggled to scale up operations once the travel restrictions were partially lifted during the summer period.
- 149 **CAP-3:** ANSPs should improve the scalability of their operations through the use of cross-border co-operation, ATM data services, and other measures. The Commission should consider such measures with particular attention during the assessment of revised draft performance plans.
- 150 **Conclusion 4:** Based on data from previous years and information from 2020, ANSPs that generated significant en route ATFM delays will lack capacity once traffic levels return to the levels of 2019.
- 151 **CAP-4:** Member States, NSAs, and ANSPs should adapt their capacity plans and to cooperate closely with the Network Manager in order be ready for traffic recovery.

- 152 **Conclusion 5:** Although average airport arrival ATFM delays were lower than in 2019, once traffic started to recover during the summer months of 2020, arrival ATFM delays resurfaced. This indicates that airport capacity may become a significant issue once traffic recovers.
- 153 **CAP-5:** ANSPs and airports should focus their capacity improvement measures on airport capacity as well.
- 154 **Conclusion 6:** Despite both the reduced amount of en route ATFM delays and airport arrival ATFM delays, as well as the dramatic drop in traffic levels, all cause departure delays remained higher than 10 minutes.
- 155 **CAP-6:** Member States, NSAs, and ANSPs should apply a holistic approach when improving capacity and work closely together with operational stakeholders to reduce all cause departure delays.

### 9.4 Cost-efficiency

- 156 Based on the analysis presented in section 6, the PRB makes the following conclusions with associated recommendation:
- 157 **Conclusion 1:** Overall, Member States incurred actual costs that were only 4% lower than the 2019 actual costs, despite a 58% decrease in service units. At local level, several Member States decreased their costs by more than 10% and others increased their costs.
- 158 **CEF-1:** Member States should increase the flexibility and scalability of their cost base considering the overall state of the European aviation industry. Moreover, platforms such as the NCP should be used to exchange best practices and to discuss how to move from exceptional to structural cost improvements.
- 159 **Conclusion 2:** Data submitted shows possible changes and delays in the implementation of the draft investment plans.
- 160 **CEF-2:** Member States should monitor the situation and inform airspace users in case of major changes to the plans. Moreover, the PRB invites Member States to prioritise investments that seek to improve environmental and capacity performances.